

SWPA M 440.1B

Approved: 04/08/09

Review: 04/08/11

Recertification: 04/08/13

AVIATION STANDARDS OPERATING MANUAL



**U.S. DEPARTMENT OF ENERGY
Southwestern Power Administration
Office of Corporate Facilities; Aviation,
Safety and Health**

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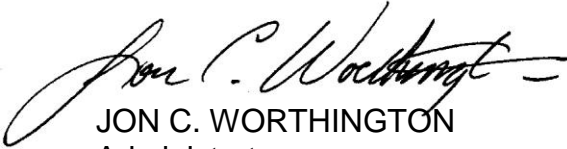
GUIDANCE MANUAL AND PROCEDURES SUPPLEMENT TO SWPA O 440.1B, WORKER PROTECTION MANAGEMENT PROGRAM FOR DOE FEDERAL EMPLOYEES, PROGRAM 19, AVIATION MANAGEMENT AND SAFETY IMPLEMENTATION PLAN

1. PURPOSE. The Aviation Standards Operating Manual (ASOM) provides operating guidance to the managers and staff of Southwestern Power Administration (Southwestern) and to the Commercial Aviation Service (CAS) vendors of fixed wing and helicopter services for Southwestern. This Manual is approved for use in Southwestern and meets the requirements of DOE directives which address aviation management and safety issues and SWPA O 440.1B, PROGRAM 19, *AVIATION MANAGEMENT AND SAFETY IMPLEMENTATION PLAN (AIP)* of 05-16-07. It is issued in accordance with the Department of Energy (DOE) and Southwestern's desire to provide the highest level of aviation safety consistent with good business practices.
2. CANCELLATIONS. SWPA M 440.2-1A, AVIATION STANDARDS OPERATING MANUAL.
3. APPLICABILITY. All employees and contract employees who use CAS aviation shall abide by the policy guidance contained in SWPA O 440.1B, PROGRAM 19, *AVIATION MANAGEMENT & SAFETY IMPLEMENTATION PLAN*, and the procedures in this operating manual. Deviations from these standards are only allowed in response to an emergency condition as provided in Chapter V. In addition, employees directly involved with any actions involving a deviation from these standards must notify their respective manager and the Aviation Manager immediately following the flight, of such deviations and the emergency condition that led to the deviation.
4. SUMMARY. This manual consists of six chapters: Chapter I - Personnel; Chapter II - Contract Aviation Services Procedures; Chapter III - Detailed Transmission Line Inspection Patrol Procedures and Training; Chapter IV - Administrative Transportation Procedures; Chapter V - Flight Following and Emergency Procedures; and Chapter VI - Safety Analysis and Review System.
5. DEFINITIONS. Found in [Appendix A](#) of this Manual.
6. REFERENCES. SWPA O 440.2-1A, *AVIATION MANAGEMENT & SAFETY IMPLEMENTATION PLAN* of 03-30-05.
7. CONTACT. Aviation, Safety and Health, Program Manager; (918) 595-6600.

8. RESPONSIBILITIES. The Aviation Manager is responsible for updating this manual.

This Manual is intended to serve the needs of the working staff. In order to accomplish this, Southwestern requests that each employee provide comments and ideas regarding any suggested changes to the Aviation Manager.

BY ORDER OF THE ADMINISTRATOR
SOUTHWESTERN POWER ADMINISTRATION



JON C. WORTHINGTON
Administrator

CONTENTS

CHAPTER I - PERSONNEL

1. Aviation Manager.....	I-1
2. Aviation Technical Consultant	I-2
3. Assistant Administrator, Office of Corporate Facilities	I-3
4. Division Director, Office of Corporate Facilities	I-3
5. Contracting Officer.....	I-3

CHAPTER II - CONTRACT AVIATION SERVICES PROCEDURES

1. Purpose	II-1
2. Organizational Considerations.....	II-1
3. Process	II-1

CHAPTER III - DETAILED TRANSMISSION LINE INSPECTION PATROL PROCEDURES AND TRAINING

1. Purpose	III-1
2. Crewmember Authority.....	III-1
3. Flight Time Limitation.	III-1
4. Approach and Departure from Helicopters	III-1
5. Smoking	III-1
6. Seat Belts	III-1
7. Emergency Exits.....	III-1
8. Doors and Windows.	III-1
9. Pilot Responsibilities.....	III-2
10. Observer Responsibilities.	III-3
11. Observer Tasks	III-4
12. Hazards	III-5
13. Transmission Line Problem Areas.....	III-6
14. Helicopter Patrol Worksheet.....	III-7
15. Logging Line Patrol Information.....	III-8
16. Use of Alcohol.	III-8
17. Conduct of Patrol.....	III-8
18. Weather Considerations.	III-9
19. Communications.....	III-10
20. Pilot/Observer Communication	III-10
21. Rest Breaks.....	III-11
22. Pilot and Crewmember Responsibilities.	III-11
23. Crewmember/Observer Training Records	III-11

Attachment III-1 SWPA F 5480.1 Detailed Transmission
Line Inspection Patrol Flight Log

Attachment III-2 SWPA F 5480.3 Detailed Transmission Line Inspection Pre-
Flight Checklist

CONTENTS (Continued)

(Chapter III Attachments - Cont'd)

Attachment III-3	SWPA F 5480.4 Detailed Transmission Line Inspection Post-Flight Checklist
Attachment III-4	SWPA F 5480.5A Transmission Line Patrol Observations
Attachment III-5	SWPA F 5480.5B Detailed Transmission Line Inspection Patrol
Attachment III-6	Training Program Crewmember
	Approach and Departure From Helicopters
	Smoking
	Refueling Procedures
	Seat Belts
	Alcoholic Beverages
	Emergency Equipment and Exits
	Doors and Windows
	Flight Following
	Air Surveillance
	Crewmember Emergency Training
	Detailed Transmission Line Inspection Patrol
	Sample Certification
	Pilots' Procedures Reference Sheet

CHAPTER IV - ADMINISTRATIVE TRANSPORTATION PROCEDURES

1.	Purpose	IV-1
2.	Definitions.....	IV-1
3.	Procedures	IV-2 & IV-3

Attachment IV-1	Approved Contractor List
Attachment IV-2	Southwestern Power Administration
	Passenger Evaluation Checklist

CHAPTER V - FLIGHT FOLLOWING AND EMERGENCY PROCEDURES

1.	Flight Following Procedures.	V-1
2.	Emergency Procedures for Search and Rescue.....	V-2
3.	AIREVAC.....	V-3
4.	Emergency Procedures for Property Damage or Other Catastrophic Occurrences	V-3

Attachment V-1	Aircraft Pre-Accident Plan
	Category "A" Procedures for Overdue Aircraft
	Category "B" Procedures for Downed Aircraft
Attachment V-2	Sample form to list local Telephone Numbers

CONTENTS (Continued)

Appendix A	Definitions
Appendix B	Aerial Hazard Maps
Appendix B-1	Aerial Hazards Map (Jonesboro) Hazards to Aerial Flying Map (Jonesboro)
Appendix B-2	Aerial Hazards Map (Springfield) Hazards to Aerial Flying Map (Springfield)
Appendix B-3	Aerial Hazards Map (Gore) Hazards to Aerial Flying Map (Gore)

CHAPTER I - PERSONNEL

1. AVIATION MANAGER. The Southwestern employee responsible for managing the Aviation Program. Responsibilities are as follows:
 - a. Develops the Southwestern Aviation Implementation Plan (AIP) detailing the standards, operating parameters, airworthiness criteria, and safety systems for planned aviation operations.
 - b. Obtains concurrence from the DOE Office of Aviation Management prior to publication or revision of the AIP.
 - c. Reviews the AIP annually, notifies the DOE Office of Aviation Management of the review results, and revises the AIP if significant changes in management, operations, or maintenance standards have occurred.
 - d. Revises the AIP within 90 days after a re-issuance of DOE Order 440.2B, AVIATION MANAGEMENT AND SAFETY of 11-27-02 that reflects substantial changes.
 - e. Ensures functional appraisals of Southwestern's aviation management, operations, and safety program.
 - f. Ensures procedures are followed for the notification, reporting and investigation of aircraft incidents and accidents in accordance with DOE O 225.1A, ACCIDENT INVESTIGATIONS, of 11/26/97, DOE O 232.1A, ENVIRONMENT, SAFETY AND HEALTH REPORTING, of 08-19-03, and its accompanying Manual, DOE M 232.1-2, OCCURRENCE REPORTING AND PROCESSING OF OPERATIONS INFORMATION, of 08-19-03, and 49 CFR 830, "NOTIFICATION AND REPORTING OF AIRCRAFT ACCIDENTS OR INCIDENTS AND OVERDUE AIRCRAFT, AND PRESERVATION OF AIRCRAFT WRECKAGE, MAIL, CARGO, AND RECORDS."
 - g. Develops and issues SWPA M 440.1B, *AVIATION STANDARDS OPERATING MANUAL* (Manual), for guidance on the procurement and utilization of aircraft in the conduct of Southwestern's business. This Manual shall be updated regularly on an as needed basis, and any changes shall be distributed to holders of such manuals.
 - h. Prepares and maintains a Safety Analysis and Review System.
 - i. Reviews, evaluates, and monitors cost, performance, and technical competency of aviation contractors.
 - j. Submits quarterly reports of flight hours, costs, and other relevant

information to the General Services Administration's Federal Aviation Interactive Reporting System (FAIRS).

- k. Submits accepted CAS vendor information to the DOE Aircraft Charter Database as soon as possible.
 - l. Submits semi-annual Senior Federal Official travel reports to the DOE Office of Aviation Management.
 - m. Reviews procurement package for acquisition of a CAS, and then works with the Contracting Officer to obtain services.
2. AVIATION TECHNICAL CONSULTANT. Person(s) identified to offer advice on the safety of aviation operations. The background shall include sufficient aviation knowledge, experience and training to competently perform assigned duties. Responsibilities are as follows:
- a. Conducts on-site, pre-qualification evaluations for prospective CAS providers to determine qualifications and abilities to fulfill Southwestern's needs.
 - b. Advises Aviation Manager about aerial patrol CAS contractor qualifications and documents reasons for acceptance/denial for prospective CAS contractor to contracting officer.
 - c. Conducts periodic inspections and tests of CAS providers under aerial patrol contract with Southwestern to assure compliance with the terms of the contract.
 - d. Prepares and keeps a current list of qualified CAS contractors, showing type of aircraft, approved pilot(s), and designation for primary or emergency use.
 - e. Keeps Aviation Manager apprised of any safety related items, i.e., changes in aviation regulations and training issues, and adheres to the procedures of this Manual.
 - f. Keeps abreast of aviation safety issues and assists in keeping this Order up to date.
 - g. Advises Aviation Manager on notification, reporting, and investigation of aircraft accidents.
 - h. Works with Southwestern staff who use aircraft services to understand their needs and help assure the program serves its customers.

3. ASSISTANT ADMINISTRATOR, OFFICE OF CORPORATE FACILITIES, OR DESIGNEE/MANAGER.
 - a. Supports the Aviation Manager and provides direction to Southwestern employees to comply with these policies and procedures.
 - b. Creates an environment within Southwestern where the efficient and cost-effective use of CAS is encouraged to facilitate the maintenance and inspection of Southwestern's transmission systems.
 - c. Ensures clear lines of responsibility for aviation safety oversight, interpretation of requirements, and audits as directed by Southwestern policy.
4. DIVISION DIRECTOR, OFFICE OF CORPORATE FACILITIES, DIVISION OF MAINTENANCE OR DESIGNEE.
 - a. Determines and communicates need for CAS to Aviation Manager and Assistant Administrator, Office of Corporate Facilities.
 - b. Ensures a Contracting Officer's Representative (COR) is appointed to prepare and oversee a procurement package in coordination with the Aviation Manager.
 - c. Assures that Southwestern maintenance personnel who have a need for aviation services use only the contract operators procured.
5. CONTRACTING OFFICER.
 - a. Responds to requests for aviation services.
 - b. Administers contract processing as set forth in the appropriate Federal Acquisition Regulations, DOE Acquisition Regulations and DOE and Southwestern Orders.

CHAPTER II - CONTRACT AVIATION SERVICES PROCEDURES

1. PURPOSE. Southwestern's Aviation program provides necessary aviation services and involves the following three areas:
 - a. Transportation of administrative passengers via CAS on an as-required basis (charter flights).
 - b. Detailed transmission line inspection patrol on a routine basis, primarily using turbine-powered helicopters.
 - c. Emergency operation on an as-needed basis, primarily using turbine-powered helicopters.

All contract services shall be provided by air carriers holding FAA Air Carrier or Operation Certificates issued in accordance with 14 CFR 121 or 135.

Each carrier must comply with DOE and Southwestern Aviation Safety policies and procedures as a condition of contract.

2. ORGANIZATIONAL CONSIDERATIONS. Four individual key positions are directly involved in contract procurement, oversight, and safety.
 - a. Aviation Manager.
 - b. Aviation Technical Consultant.
 - c. Contracting Officer.
 - d. Assistant Administrator, Office of Corporate Facilities (or the Assistant Administrator's designee).
3. PROCESS. The Aviation Manager is directly involved in the contractor procurement process as outlined in this chapter.

CHAPTER III - DETAILED TRANSMISSION LINE INSPECTION PATROL PROCEDURES AND TRAINING

1. PURPOSE. To set the operating standards for Southwestern's detailed transmission line inspection patrols. These aerial patrols are performed on transmission lines to identify major maintenance problems including, but not limited to, broken insulators, structure damage, right-of-way access, encroachments, and weather-related damage. Each circuit mile of transmission line is flown on a periodic basis to identify such problems.
2. CREWMEMBER AUTHORITY. Either the pilot or the observer has the authority to terminate a detailed transmission line inspection patrol at any time when any condition of patrol activities affects the safe and effective conduct of the patrol and such conditions cannot be resolved while conducting the patrol or requires a higher level personnel involvement.
3. FLIGHT TIME LIMITATION. Detailed transmission line inspection patrol flight time shall be limited to (a maximum of) 5 hours per day. There is no time limit for deadhead time, emergencies (as per Chapter V), or other non-detailed inspections of the transmission line such as videotaping or transportation of personnel to a specific location.
4. APPROACH AND DEPARTURE FROM HELICOPTERS. Crewmembers shall approach and depart the helicopter from an area visible to the pilot. A 45-degree angle from the nose is preferable. Extreme caution shall be used when under the main rotor blades and the area around the tail rotor shall be avoided at all times. WALKING UNDER THE TAIL BOOM OR NEAR THE TAIL ROTOR IS PROHIBITED AT ALL TIMES.
5. SMOKING. Smoking is not permitted within 50 feet of a helicopter on the ground. SMOKING IS NOT PERMITTED IN HELICOPTERS.
6. SEAT BELTS. The pilot and each crewmember shall use seat belts and shoulder harnesses and they shall be fastened at all times while the helicopter rotors are turning. Upon departure from the helicopter, all passengers shall secure their respective seat belts and harnesses and ensure that no loose ends are left hanging outside of the helicopter.
7. EMERGENCY EXITS. The doors are to be used as emergency exits from the helicopter.
8. DOORS AND WINDOWS. Most helicopter doors are light and can be easily damaged if slammed or left unsecured; therefore, always close the doors with extreme care and assure that the doors are closed securely. When departing the helicopter, observers and passengers shall hold on to the doors while open to

prevent a sudden gust of wind from slamming them against the helicopter and possibly injuring an employee or breaking the windows or hinges on the aircraft. Always follow the pilot's pre-flight briefing instructions on the normal and emergency use of the doors. **DO NOT THROW ANY OBJECT OUT OF THE HELICOPTER WINDOWS AT ANY TIME.**

9. PILOT RESPONSIBILITIES.

- a. Provides a safety briefing before each flight to Crewmembers.

The pre-flight briefing shall include the following topics:

- (1) Rotor Blades Clearance,
- (2) Smoking Regulations,
- (3) Use of Seat Belts and Shoulder Harness,
- (4) Passenger Doors used as Emergency Exits,
- (5) Location for First Aid/Survival Equipment,
- (6) Emergency Procedures - including use of radio-121.5 frequency or cell phone,
- (7) Operation and Location of Fire Extinguisher,
- (8) Routes and Schedule,
- (9) Flight Hazards and Weather, and
- (10) Fire and smoke control, emergency landing and shutdown of helicopter.

The depth of coverage of each topic shall be appropriate to the degree of experience for each observer. Special concern shall be given to discussion of unusual hazards or other than normal conditions. While the pilot is responsible for the initiation of the briefing, observers are expected to participate as full partners in the review of safety issues. The pilot shall also complete SWPA F 5480.3, Detailed Transmission Line Inspection Patrol Pre-Flight Checklist ([Attachment III-2](#)), and SWPA F 5480.4, Detailed Transmission Line Inspection Patrol Post-Flight Checklist ([Attachment III-3](#)), and provide the documents to the observer/Craft Superintendent who will keep the original and send a copy of the forms to the Aviation Manager.

- b. Determines actual weights of each crewmember and official passenger and total actual weights of equipment being carried on aircraft.

- c. The Pilot will perform weight and balance calculations to ensure that the aircraft is within the manufacturer's and Federal Aviation Administration (FAA) established weight and balance limitations for each operation, flight or mission profile for which the aircraft are to be operated.
- d. Safety of flight. The pilot shall not perform observer duties or provide damage assessment information to the observer.
- e. Be aware of hazards that exist along the patrol route and receive a transmission line update briefing from the observer prior to the patrol.
- f. Responds to reasonable requests from the observer. Shall not distract the observer with an excessive amount of unrelated conversation during the patrol.
- g. Performs flight including a proper elevation for the observer to communicate with Southwestern power system dispatcher every 30 minutes.

10. OBSERVER RESPONSIBILITIES.

- a. Prior to take-off, call the power system dispatcher in Springfield (417) 891-2604, 2605 or 2606, or via microwave ext. 2604, 2605 or 2606 with the information needed for the Dispatcher to complete Section A of SWPA F 5480.1, Detailed Transmission Line Inspection Patrol Flight Log (see sample, ([Attachment III-1](#))). Observer keeps a completed 5480.1 used to call in the information. Southwestern Dispatchers shall maintain this information with the daily log and retain for ten (10) years. For emergencies call: power system dispatcher on (417) 891-2604, 2605 or 2606, or via microwave ext. 2604, 2605 or 2606.

Each day, prior to operation of any contractor-furnished aircraft flight, the observer shall participate in pre-flight briefing related to the safe operation of the aircraft. The observer shall review SWPA F 5480.3, Detailed Transmission Line Inspection Patrol Pre-Flight Checklist ([Attachment III-2](#)), and SWPA F 5480.4, Detailed Transmission Line Inspection Patrol Post-Flight Checklist ([Attachment III-3](#)) for completion, after the pilot has completed the forms. Observer will fax a copy of the SWPA F 5480.3 document to their respective office before the flight commences. The observer shall send a copy of the forms, SWPA F 5480.3 and SWPA F 5480.4 to the Aviation Manager after the flight. The observer shall carry out aerial line patrol assignments without direct supervision.

- b. Observes and accurately reports transmission line conditions on all patrols.
- c. Contributes to flight safety by warning the pilot of hazards along the route

of flight in a pre-flight briefing.

- d. Contributes to flight safety by avoiding contact with the helicopter controls, or in any way restricting the pilot's freedom of movement.
- e. Properly uses the following personal protection equipment:
 - (1) Aviator's flight helmet,
 - (2) Fire-retardant flight suit and gloves; and
 - (3) All-leather boots.
- f. Obtains and has available for use:
 - (1) Survival Kit,
 - (2) First Aid Kit,
 - (3) Cellular phone or radio,
 - (4) Y-cord adapter,
 - (5) Aviation Standard Operation Manual,
 - (6) Flight helmet (Meets or exceeds U.S. Army and Coast Guard specifications),
 - (7) Flight suit,
 - (8) Leather boots; and
 - (9) Leather gloves

[Type mil G 811888 (winter) Flight Suits, Ltd. 1-800-748-6693 Type GSFRP-2 (Summer)].

11. OBSERVER TASKS.

- a. Directs the patrol by establishing priority for the lines to be patrolled and notifying the pilot if:
 - (1) The aircraft is not properly positioned to safely or effectively view the transmission line,
 - (2) The speed of the aircraft is too high for proper patrol. (appropriate minimum airspeed is generally 20 mph),

- (3) A pass-back is necessary to inspect a specific structure (pull up-circle), and
 - (4) At any time, the observer feels a break is needed or feels uncomfortable.
- b. Participates in aviation observer safety training annually.
- c. During pre-flight briefing, provides the pilot with a transmission line update of changes or additions to the transmission line system or hazards that have developed along the route since the last patrol.
- d. Complies with the instructions of the pilot in command and shall not distract the pilot with an excessive amount of unrelated conversation during the patrol.
- e. Conducts him/herself in a safe and responsible manner while in and around the aircraft.
- f. Familiarizes him/herself with the transmission lines to be patrolled.
- g. Maintains awareness of hazards that exist along the patrol route.
- h. Observes and records damage to structures, insulators, hardware, conductors, and other equipment; and observes conditions on or bordering the right-of-ways, including encroachments, dangerous trees, access roads, brush, slides, erosion, etc.
- i. When appropriate, makes inspections of questionable situations by landing and observing from the ground.
- j. Analyzes defects observed and determines whether they require routine or emergency maintenance.
- k. Makes recommendations to effect immediate repairs to transmission system in emergency situations.
- l. Ensures that reports of emergency situations are reported to the power dispatcher or responsible supervisor.
- m. Completes written reports of observations for later transfer to the formal record.
- n. Keeps current work sheets for all transmission lines patrolled.
- o. Performs detailed infrared photography of lines and substation.
- p. Performs flight-following call-in time every 30 minutes (time may be

extended to a **MAXIMUM** of 45 minutes if prior arrangements have been made between the observer and dispatcher). The flight crew shall update their estimated time of arrival if they expect to arrive more than 15 minutes after their planned estimated time of arrival. The flight crew shall notify the power system dispatcher when the aircraft has landed.

12. HAZARDS. Hazards to detailed transmission line inspection patrol vary per location, weather conditions, time of day, etc. The observer, along with the pilot, shall be aware of any possible hazards that may come up during the patrol. Some common hazards include, but are not limited to:
 - a. Distractions or pre-occupation with other problems.
 - b. Transmission line crossings.
 - c. Glare from the sun.
 - d. Poor weather conditions such as wind, fog, rain, snow, haze, etc.
 - e. Low-flying aircraft.
 - f. Birds.
 - g. Drill rigs.
 - h. Radio tower guy wires.
 - i. Transmission lines converging at power plants in deep canyons.
 - j. Fatigue (flying too long without a break).
 - k. Breakdown or loss of Crewmember communication.
 - l. Congested areas (several transmission lines converging at a substation, several transmission lines running parallel to each other, etc.).
 - m. Unfamiliarity with the transmission lines being patrolled.
13. TRANSMISSION LINE PROBLEM AREAS. Transmission lines are susceptible to many problems as a result of weather, age, vandalism, etc. Some problems are more serious than others. Problems shall be classified into two categories: primary and secondary.

Primary problems are those that may result in an imminent outage or pose a serious threat to the safety and/or welfare of the public. If the damage, in the observer's view, poses a serious threat, the observer shall immediately notify the supervisor.

Secondary problems are those that may not result in an imminent outage and/or not pose a serious threat to the safety or welfare of the public. These problems shall be put on a maintenance schedule to rectify at a later date. The observer must use discretion in classifying problems as primary or secondary.

Listed below are problems usually considered as primary or secondary:

a. Primary problems:

- (1) Broken or split crossarms (may also be secondary),
- (2) Danger trees,
- (3) Downed or loose static line or loose conductor,
- (4) Severely damaged conductor, or insulators,
- (5) Encroachments,
- (6) Foreign material in line (bird nests, wires, shrubs, etc.),
- (7) Lines that cross over and under other lines coming into contact with each other because of ice loading, wind damage, etc.,
- (8) Severe structure damage; and
- (9) Equipment operation (farm equipment, cranes) under the line not within safe clearances. Note: In cases like these, the helicopter may land so the observer can notify the operator or owner of the hazard.

b. Secondary Problems:

- (1) Loose X-braces,
- (2) Structure damage (leaners caused by farm equipment or animals, burnt wood poles, woodpecker damage),
- (3) Right-of-way access problems and fences,
- (4) Right-of-way and/or structure erosion,
- (5) Loose or damaged guy wires (may also be primary),
- (6) Loose or damaged structure ground wires,
- (7) Loose or damaged dampers,

- (8) Loose or missing hardware; and
- (9) Missing or faded structure numbers.

Many other problems may exist on or around the transmission line. Care shall be taken by the observer not to overlook major problems by looking for less significant problems. Smaller, less significant problems will normally be identified during the routine ground patrol of the transmission line. Discussion with line crew supervisors and observers may identify problems other than those listed above and the appropriate responses to them. Again, common sense and care in response to these problems are important.

- 14. HELICOPTER PATROL WORKSHEET. A worksheet with codes to record detailed transmission line inspection patrol discrepancies shall be used [See SWPA F 5480.5A, Transmission Line Patrol Observations ([Attachment III-4](#)), and SWPA F 5480.5B, Detailed Transmission Line Inspection Patrol, ([Attachment III-5](#))].

- 15. LOGGING LINE PATROL INFORMATION. Logging of transmission line problems observed during the aerial patrol is a primary function of the patrol observer. Certain information, such as the nature and location of the problem on the transmission line being patrolled is important to document. In many cases, the structure number may be missing or faded to the point that it is unreadable. The observer may have to instruct the pilot to circle back to a structure with a readable number to use as a reference. Missing or faded structure numbers shall be reported as secondary problems and put on a list to be replaced.

The observer shall use the information from logs made on previous patrols. This not only helps orient the observer to the transmission line, but also alerts the observer to possible recurring problems or stress points. A copy of the information logged during the patrol shall be sent to the respective Craft Superintendent. The original shall be retained by the observer.

- 16. USE OF ALCOHOL.

- a. Use of alcoholic beverages is prohibited during aviation operations.
- b. Pilots and Crewmembers shall adhere to 14 CFR 91 requirements. No pilot or crewmember shall be suffering the effects or the aftereffects of alcohol or be intoxicated when reporting for duty or when on duty. Eight hours after last consumption of alcohol or a .04 or less alcohol blood content is usually considered acceptable.

- 17. CONDUCT OF PATROL. Under detailed line inspection patrol conditions, the flights shall be conducted at speeds, altitudes, and distances which afford the observer the best opportunity to thoroughly inspect the line and right-of-way, and which are commensurate with safe flight practices.

- a. Minimum Rotor Blade Clearance. During detailed transmission line inspection patrol, the helicopter shall be flown at least **one rotor diameter above and one rotor diameter to the side** of the transmission line being patrolled. Crewmember comfort, difference in terrain, timber growth, visibility of the structures, etc., may dictate greater clearance requirements. However, it is understood that a pilot shall not fly lower than the transmission line being patrolled unless the helicopter is hovering or is landing.

The helicopter pilot shall maintain rotor blade clearance by referencing crossarms or structures rather than referencing conductors. This provides the observer the best possible site picture while providing a safe margin of clearance for the helicopter.

- b. Minimum Spacing Clearance. The helicopter shall not be flown between two parallel transmission lines unless a clearance of three rotor diameters can be maintained in all directions.
- c. Pass-back Inspection. Occasionally, the observer shall require a better look at a structure for damage and shall request the pilot to make a pass-back. When this happens, the pilot shall have the following options:
 - (1) Hovering - When hovering is necessary, the pilot shall maintain a minimum of one rotor diameter distance from all parts of the transmission structure.
 - (2) Circling - When circling a structure, the pilot shall fly the helicopter at airspeed so as to maintain translational lift and at an altitude so as to allow clearance over the transmission line to permit a safe autorotation.
 - (3) Landing - On certain occasions, the observer may request the pilot to land at a point near a structure or conductor to take a look from outside the helicopter. As previously stated, minimum rotor clearances shall be maintained while landing.
- d. Detailed line inspection patrols are performed with aircraft equipped with wire strike equipment/devices.

18. WEATHER CONSIDERATIONS.

- a. Wind. Pilots shall plan detailed transmission line inspection patrol flights whenever possible, using a head wind. The following is a list of pilot techniques that shall be considered when patrolling during windy conditions:
 - (1) Crabbing into the wind shall take precedence over slipping into the

wind.

- (2) When patrolling with a tail wind, the ground speed may be faster than the normal patrol speed in order to maintain the rotor disc in translational lift. Downwind patrol shall be minimized.
 - (3) Flat terrain shall accommodate patrolling with higher wind speeds than shall rugged or mountainous terrain.
 - (4) The minimum rotor blade clearances and minimum spacing clearances shall be increased to maximize crewmember comfort and provide for emergency situations.
 - (5) Due to the effect of wind on ground speed and translational lift, downwind turns in low-altitude, low-airspeed conditions are critical maneuvers and shall be accomplished with extra care and attention to detail.
- b. Visibility. The importance of visibility to aviation operations cannot be overstated. The following are factors that affect pilot and crewmember visibility and must be considered during detailed transmission line inspection patrol.
- (1) Whenever possible, pilots shall plan detailed transmission line inspection patrols flying away from the sun. If this is not possible due to wind conditions, terrain or other obstacles, special equipment such as sunglasses or sun visors shall be used to decrease the sun's glare.
 - (2) During all flights, the pilot shall operate under visual flight rules (VFR) conditions, as per respective approved Part 135 Operation Manual. If at any time during the patrol, the weather drops below the minimums required for VFR flight, the pilot shall terminate the patrol until such time as VFR conditions are reestablished.
 - (3) During flights that encounter marginal VFR conditions, the pilot shall use caution in determining whether to continue the patrol. However, pilot's discretion notwithstanding, safety of flight shall have the highest priority at all times.

19. COMMUNICATIONS.

- a. Communications shall be established with the power system dispatcher; and, he/she shall fill out SWPA F 5480.1, FLIGHT LOG, ([Attachment III-1](#)) prior to actually starting a detailed transmission line inspection patrol.
- b. A separate flight log shall be filled out for each line route segment or direct

flight. Communication shall be established prior to starting each line route segment.

- c. If radio communications are required while patrolling a line route segment, the pilot shall break off the patrol and climb to a higher altitude prior to using the communication radios. Once the required communications have been completed, the pilot may continue the patrol at the appropriate altitude.
20. PILOT/OBSERVER COMMUNICATION. During the patrol, both the pilot and observer shall monitor hazardous marking signs/balls. Upon seeing the hazardous marking signs/balls, Crewmembers shall verbally communicate the hazard. Example: The pilot may say, "I have the overhead crossing," or whatever the hazard may be, or the observer may say, "Do you have the overhead crossing?" A mandatory response to the question or comment is required. The pilot may say, "I have the overhead crossing," or the observer may respond with a "thumbs up" signal.
 21. REST BREAKS. Both the pilot and observer have the responsibility to request safety and rest breaks as needed.
 22. PILOT AND OBSERVER RESPONSIBILITIES. Pilot and Observer shall periodically discuss with management and area safety personnel their respective responsibilities.
 23. CREWMEMBER/OBSERVER TRAINING RECORDS.
 - a. Each crewmember/observer must receive crewmember/observer training approved by the Aviation Manager prior to assignment as a crewmember/observer. (See [Attachment III-6.](#))
 - b. Appropriate observers shall be certified. The Aviation Manager shall maintain this documentation.

Attachment III-1
Page 1

**U.S. DEPARTMENT OF ENERGY
SOUTHWESTERN POWER ADMINISTRATION
DETAILED TRANSMISSION LINE INSPECTION PATROL FLIGHT LOG**

[illegible]

ATTACHMENT III-1, CONTD.

SWPA F 5480.1, Page 2

SWPA F 54801 (Rev. 12-93), Back

SECTION B: INSPECTION SITES / ROUTE OF FLIGHT				
CODES: (F) FUEL STOP • (L) LUNCH STOP • (R) REST • (P). PATROL • (E) EN ROUTE				
INSPECTION SITES / ROUTE OF FLIGHT LOCATION	CODES	TIME		TIME/STRUCTURE
		DEPARTURE	ARRIVAL	
RADIO COMMUNICATION, IF AVAILABLE, MUST BE ESTABLISHED AT INTERVALS OF NOT MORE THAN 30 MINUTES **, AND IMMEDIATELY BEFORE AND AFTER COMMUNICATIONS, CHECK IN BY TELEPHONE WITHIN 30 MINUTES ** OF DESIGNATED FUEL I LUNCH STOPS. (** TIME MAY BE EXTENDED TO A MAXIMUM OF 45MINUTES IF PRIOR ARRANGEMENTS HAVE BEEN MADE BETWEEN OBSERVER AND DISPATCHER.)				

INSTRUCTIONS FOR PREPARING SWPA F 5480.1

A Flight Log for flight following will be prepared for each flight scheduled by the pilot in command/observer. These instructions are designed to assist in the correct preparation of the form. The form has been divided into five sections and the individual descriptions relate to specific items in each section.

SEC. A. Aircraft Data and Flight Plan,

- Item 1. Type: Most Southwestern flights will be either Visual Flight Rules (VFR) or Instrument Flight Rules (IFR). Check appropriate box.
- Item 2. Aircraft Identification: Use the "N" number designation that is painted on the fuselage, tail, or wings of the mission aircraft.
- Item 3. Aircraft Type/Special Equipment:
SEL - Single engine land aircraft
SES - Single engine sea aircraft
MEL - Multi engine land aircraft
MES - Multi engine sea aircraft
HEL – Helicopter
- Item 4. Departure Point: Location where the flight mission will originate.
- Item 5. Departure Time: The time the flight mission is scheduled to begin in local time. Enter the proposed time of departure and the actual time of takeoff to the nearest minute.
- Item 6. Crewmembers/Passengers: The names of all persons scheduled to travel on the flight. This manifest must be updated each time there is a change in crew or passengers.
- Item 7. Estimated Time En route: The planned hours and minutes of flying time to scheduled designation.
- Item 8. Patrol Speed: The pilot will provide information needed.
- Item 9. Number Aboard: The number in this item must be same as in number listed in Block #6.
- Item 10. Self-explanatory.
- Item 11. Destination contact/telephone. Also list telephone numbers for fueling stops, if possible.

SEC. B. Inspection Sites/Route of Flight: The codes, departure and arrival, and Time/Structure information is vital to procedures used in cases of search and rescue operations. Information for this section is obtained from the pilot and observer and will be completed for each flight.

SWPA F 5480.3

**U.S. DEPARTMENT OF ENERGY
Southwestern Power Administration**

DETAILED TRANSMISSION LINE INSPECTION PATROL PRE-FLIGHT CHECKLIST

NAME OF PILOT		NAME/TITLE OF PERSON PERFORMING CHECK			
DATE OF FLIGHT	HAZARD MAP REVIEW	HAZARD NOTED		Southwestern Observer	
WEIGHT CHECK:					
AIRCRAFT	WEIGHT	EQUIPMENT		WEIGHT	
<hr/>					
PASSENGER/CREW WEIGHTS: (1) _____ (2) _____ (3) _____					
AIRCRAFT PRE-FLIGHT		YES	NO	PILOT PRE-FLIGHT	
FIRST AID/SURVIVAL GEAR ON BOARD		<input type="checkbox"/>	<input type="checkbox"/>	VALID FAA CERT.*	
OPERATIONAL FIRE EXT.		<input type="checkbox"/>	<input type="checkbox"/>	PILOT WEATHER BRIEFING	
PILOT/CREW PPE		<input type="checkbox"/>	<input type="checkbox"/>	TIME: _____	
AIRCRAFT NAV/COM/EQUIP.		<input type="checkbox"/>	<input type="checkbox"/>	SOURCE: _____	
OPERATIONAL		<input type="checkbox"/>	<input type="checkbox"/>		
COMMUNICATION RADIOS		<input type="checkbox"/>	<input type="checkbox"/>	HAZARD MAPS REVIEWED	
NAVIGATION RADIOS		<input type="checkbox"/>	<input type="checkbox"/>	WEIGHTS/BALANCES REVIEWED	
ELT ARMED/OPERATIONAL		<input type="checkbox"/>	<input type="checkbox"/>	FLIGHT PLAN FILED	
OBSVR EQUIPMENT INSTALLED		<input type="checkbox"/>	<input type="checkbox"/>	FLIGHT PLAN ACTIVATED	
* FLIGHT OPERATIONS WILL NOT BE CONDUCTED IF EITHER THE PILOT OR THE AIRCRAFT DOES NOT HAVE A VALID FAA CERTIFICATE. OBSERVER IS TO NOTIFY THE SAFETY MANAGER IMMEDIATELY IF CERT IS NOT VALID.					

A PREFLIGHT BRIEFING WAS CONDUCTED BY THE PILOT BEFORE THE FLIGHT AND CHAPTER III REQUIREMENTS IN THIS MANUAL WERE READ AND WILL BE ADHERED TO ON THIS FLIGHT BY THE UNDERSIGNED. THIS FORM SHALL BE FAXED TO THE OBSERVER'S OFFICE BEFORE THE FLIGHT.

Signature of Pilot

Signature of Observer

Signature of Craft Superintendent

The Craft Superintendent/observer for Southwestern Power Administration shall sign and keep the original of this form and mail a copy of the completed form to Southwestern Power Administration, Aviation Manager, One West Third Street, Tulsa, OK 74103.

SWPA M 440.1B
04-08-09

Attachment III-3

SWPA F 5480.4

**U.S. DEPARTMENT OF ENERGY
Southwestern Power Administration**

DETAILED TRANSMISSION LINE INSPECTION PATROL POST-FLIGHT CHECKLIST

DATE OF FLIGHT	NAME OF PILOT	NAME/TITLE OF PERSON PERFORMING CHECK		
EQUIPMENT WEIGHT	HAZARD NOTED (On Pre-Flight Check)	OBSERVER SIGNATURE		
NEW HAZARDS:		YES	NO	
IDENTIFIED				
PLOTTED				
SAFETY RELATED INCIDENTS TO BE REPORTED				
IF YES, A WRITTEN REPORT MUST BE FILED WITH THE AVIATION MANAGER.				

Signature of Pilot _____

Signature of Observer _____

Signature of Craft Superintendent _____

The Craft Superintendent/observer for Southwestern Power Administration shall sign and keep the original of this form and mail a copy of the completed form to Southwestern Power Administration, Aviation Manager, One West Third Street, Tulsa, OK 74103.

SWPA M 440.1B
04-08-09

Attachment III-4

SWPA F 5480.5A
SOUTHWESTERN POWER ADMINISTRATION
TRANSMISSION LINE PATROL OBSERVATIONS

DATE: _____

FROM: _____ TO: _____
Line No. Sec. Str. No. Line No. Sec. Str. No.

ITEMS TO CHECK	LOCATION & EXPLANATION OF DEFECT
1. INSULATORS	
2. POLES	
3. W.P. HOLES	
4. CROSS ARMS	
5. HARDWARE	
6. CROSS BRACES	
7. KNEE RACES	
8. CONDUCTOR	
9. ARMOR ROD	
10. SHIELD WIRE	
11. VIB. DAMPERS	
12. GUYS	
13. FENCE GRNDS.	
14. EROSION	
15. R/W OBSTRUCTION	
16. BRUSH & TREES	
17.	

TYPE OF PATROL: REMARKS & RECOMMENDATIONS

PATROLMEN OR OBSERVER: _____

PILOT: _____

RETURN A COPY OF THE COMPLETED FORM TO THE CRAFT SUPERINTENDENT REQUESTING
THE FLIGHT. PATROLMAN OR OBSERVER: RETAINS THE ORIGINAL.

SWPA M 440.1B
04-08-09

Attachment III-5

SWPA F 5480.5B
DETAILED TRANSMISSION LINE INSPECTION PATROL

Line _____

[illegible]

DATE: _____
OBSERVER: _____

RETURN A COPY OF THE COMPLETED FORM TO THE CRAFT SUPERINTENDENT REQUESTING THE FLIGHT. OBSERVER: RETAIN ORIGINAL FORM.

**TRAINING PROGRAM
CREWMEMBER**

DETAILED TRANSMISSION LINE INSPECTION PATROL

1. APPROACH AND DEPARTURE FROM HELICOPTERS. Crewmembers shall approach and depart the helicopter from an area visible to the pilot. A 45-degree angle from the nose is preferable. Extreme caution shall be used when under the main rotor blades and the area around the tail rotor shall be avoided at all times. **WALKING UNDER THE TAIL BOOM OR NEAR THE TAIL ROTOR IS PROHIBITED AT ALL TIMES.**
2. SMOKING. Smoking is prohibited within 50 feet of a helicopter on the ground. **SMOKING IS PROHIBITED IN HELICOPTERS.**
3. REFUELING PROCEDURES. During any refueling operation, Crewmembers must depart the aircraft and remain at least 100 feet away until refueling is complete.
4. SEAT BELTS. The pilot and each crewmember shall use seat belts and shoulder harnesses, and they shall be fastened at all times while in the helicopter. Upon departure from the helicopter, all passengers shall secure their respective seat belts and harnesses and ensure that no loose ends are left hanging outside of the helicopter.
5. ALCOHOLIC BEVERAGES. No person may drink any alcoholic beverage while aboard or near a helicopter.
6. EMERGENCY EXITS. The doors are to be used as emergency exits from the helicopter.
7. DOORS AND WINDOWS. Most helicopter doors are light and can be easily damaged if slammed or left unsecured; therefore, always close the doors with extreme care and assure that the doors are closed securely. When departing the helicopter, observers and passengers shall hold on to the doors while open to prevent a sudden gust of wind from slamming them against the helicopter and possibly injuring an employee or breaking the windows or hinges on the aircraft. Always follow the pilot's pre-flight briefing instructions on the normal and emergency use of the doors. **DO NOT THROW ANY OBJECT OUT OF THE HELICOPTER WINDOWS AT ANY TIME.**
8. FLIGHT FOLLOWING. The power system dispatcher shall flight-follow the mission and the observer shall communicate with the Power System Dispatcher as required.
9. AIR SURVEILLANCE. Crewmembers shall maintain air surveillance for other aircraft. Aircraft in close proximity to the helicopter shall be reported to the pilot to ensure safe air space separation is maintained.
10. CREWMEMBER EMERGENCY TRAINING. Crewmember emergency training shall

include the following:

The pre-flight briefing shall include the following topics:

- (1) Rotor Blades Clearance,
- (2) Smoking Regulations,
- (3) Use of Seat Belts and Shoulder Harness,
- (4) Passenger Doors used as Emergency Exits,
- (5) Location for First Aid/Survival Equipment,
- (6) Emergency Procedures - including use of radio-121.5 frequency or cell phone,
- (7) Operation and Location of Fire Extinguisher,
- (8) Routes and Schedule,
- (9) Flight Hazards and Weather, and
- (10) Fire and smoke control, emergency landing and shutdown of helicopter.

Special concern shall be given to discussion of unusual hazards or other than normal conditions. While the pilot is responsible for the initiation of the briefing, observers are expected to participate as full partners in the review of safety issues. The pilot shall also complete SWPA F 5480.3, Detailed Transmission Line Inspection Patrol Pre-Flight Checklist ([Attachment III-2](#)), and SWPA F 5480.4, Detailed Transmission Line Inspection Patrol Post-Flight Checklist ([Attachment III-3](#)), and provide the documents to the observer who will fax SWPA F 5480.3 to their respective office, keep the originals and send a copy of both forms to the Aviation Manager. The depth of coverage of each topic shall be appropriate to the degree of experience for each observer such as:

- a. Instruction on emergency assignment and procedures including coordination with the pilot, i.e., fire and smoke control in flight, emergency landings, shutdown of helicopter, and departure from the helicopter.
- b. Individual instruction in the location, function, and operation of the emergency equipment such as:
 - (1) Fire extinguisher,
 - (2) Radio,
 - (3) Emergency locator transmitter (location and use) - #7700,

- (4) Emergency radio number #7600,
 - (5) First aid kit, and
 - (6) Survival equipment.
 - c. Instruction in emergency procedures for property damage and other catastrophic occurrences and to be able to direct the pilot being utilized on an emergency basis.
11. DETAILED TRANSMISSION LINE INSPECTION PATROL. Observer/crewmember training shall include the following:
- a. The observer is to **INFORM THE PILOT** if he/she believes the conduct of the patrol presents a problem in terms of safety or the effective conduct of the patrol.
 - b. The pilot and observers shall work as a team to ensure that the patrol is being conducted in a safe manner.
 - c. Ordinarily, the pilot will become aware of line crossings before the observer. However, the observer shall give an oral and visual warning to the pilot when he/she becomes aware of another transmission line crossing being patrolled and the pilot has not acknowledged his/her awareness of the crossing.
 - d. The pilot shall acknowledge the observer's warning by replying orally and visually of his/her intentions to take appropriate action.
 - e. The observer shall then determine that the pilot has initiated the appropriate action before he resumes his reconnaissance of the transmission lines.
 - f. If the pilot fails to initiate appropriate action, the observer shall direct the pilot to terminate the patrol immediately.
 - g. At any time that the observer feels a break is needed, he/she shall inform the pilot and the pilot shall land at the first safe opportunity for a break from patrol.
12. SAMPLE CERTIFICATION. (See following page.)

SAMPLE LISTING OF OBSERVER CERTIFICATION

In accordance with SWPA O 440.1B, Program 19, AVIATION MANAGEMENT AND IMPLEMENTATION PLAN (AIP), and Southwestern's Aviation Standards Operating Manual, the following employees have completed the required training and are thereby qualified to perform the duties of observer during helicopter patrol of transmission lines.

NAME Last, First	TYPE OF TRAINING Initial/Annual	LOCATION & DATE
1.		
2.		
3.		
4.		
5.		

PILOTS' PROCEDURES REFERENCE SHEET

The following is a list of procedures that shall be followed by the pilot(s) when performing detailed transmission line inspection patrols:

- Deliver a thorough pre-flight briefing
- Maintain minimum rotor clearances
- Maintain correct position with respect to transmission lines
- Reference the structures rather than conductors during flight
- Scan at least two structures ahead
- Allow sufficient clearance over lines to permit safe autorotation
- Review hazardous locations where ground patrols shall be performed rather than aerial patrols
- Avoid flying toward the sun when possible
- Adjust the flight for weather conditions including prevailing winds
- Estimate best ground speed for mission accomplishment
- Adjust ground speed to accommodate weather and terrain
- Provide an elevation for communication for observer flight following call in
- Take safety and rest breaks as needed or required
- Communicate appropriately with observer before taking off and during the flight
- Maintain awareness of other aerial patrols on adjacent transmission lines or other aerial activity in the general area
- Perform weight and balance calculations to ensure the maximum allowable gross weight of the helicopter is not exceeded

NOTE:

During detailed transmission line inspection patrol flights, observers and crewmembers shall note the extent to which pilots comply with these procedural guidelines. Any significant deviation shall be reported to the appropriate supervisor, who shall, in turn, notify the Aviation Manager. Significant deviations are those that jeopardize the safety of the flight and/or the accomplishment of the mission.

CHAPTER IV - ADMINISTRATIVE TRANSPORTATION PROCEDURES

1. **PURPOSE.** Periodically, Southwestern requires CAS vendors for airplane passenger service to meet its mission requirements and other official travel needs. The following procedures shall ensure that only properly qualified, equipped, and approved CAS contractors are used in order to provide the highest possible level of safety.
2. **DEFINITIONS.** The definitions applicable to this section are found in OMB Circular A-126 "Improving the Management and Use of Government Aircraft" and DOE O 440.2B Attachment 2, Definitions.
 - a. **Mission Requirements.** In relation to use of Government aircraft at the Department of Energy, means activities that constitute the discharge of the Department's official responsibilities. Examples of Mission requirements include, but are not limited to: Aerial Survey, such as atmospheric sampling, biological surveys, radiological surveys, natural resource management, oceanic, atmospheric, and geological research, etc.; Aerial Photography, for consequence management, decommissioning of facilities, construction, law enforcement, etc.; Aerial Patrols, such as law enforcement and intelligence activities, power line patrols, pipeline patrols, security, search and rescue, etc.; Transportation, such as transportation of prisoners, detainees, illegal aliens, mission personnel, fire fighting, rescue operations, cargo, etc.; Research and Development such as aeronautical and space research, aerial sensor development, etc.; Rotorcraft External Load operations such as fire fighting, agriculture management, construction, etc.; Training such as flight or mission crew training. Travel aboard Government aircraft for purposes of attending meetings, site visits, or conferences or making speeches are examples of travel that are not mission requirements travel.
 - b. **Official Travel.** Means (i) travel to meet mission requirements, (ii) required use travel, and (iii) other travel for the conduct of agency business.
 - c. **Required Use Travel.** Travel of an executive agency officer or employee for whom the use of Government aircraft is required to meet bona fide communications or security needs of the Agency or exceptional scheduling requirements. An example of a bona fide communications requirement includes maintaining continuous 24-hour secure communications with the traveler. Bona fide security requirements include, but are not limited to, life threatening circumstances. Exceptional scheduling requirements include emergencies and other operational considerations which make commercial transportation unacceptable.

3. PROCEDURES. Only a U.S. FAA-certified scheduled airline, DOE Fleet aircraft or approved CAS vendor shall be used to transport employees on official business for Southwestern. When a requirement exists for any aviation services, the requiring office shall:
 - a. Review [Attachment IV-1](#), Approved Contractor List for DOE-accepted CAS contractor(s) that service the appropriate area.
 - b. If possible, contact the Aviation Manager to verify that the list of qualified CAS contractors is current.
 - c. Each traveler and the travel-approving authority must consider the most cost-effective means of travel commensurate with accomplishment of the official travel, other than mission travel. See definitions.
 - d. Each traveler, other than one on mission travel, shall have a valid Travel Authorization while on board a government aircraft.
 - e. Contact Southwestern's Aviation Manager in a timely manner to advise of the traveler's intended need for air travel, when requesting other than U.S. certified scheduled airlines.
 - f. Provide Southwestern's Aviation Manager and the Office of General Counsel, with the following information at least ten working days before the scheduled travel date:
 - (1) Purpose of the proposed travel (e.g., mission travel, other official travel, required use travel, political travel, non-official travel, Presidentially directed travel - see definitions),
 - (2) Dates and itinerary of travel,
 - (3) Names, titles and affiliations of persons traveling,
 - (4) Reason why each traveler must be present,
 - (5) Any special aircraft requirements including aircraft type, special seating, secure phones, catering, etc.; and
 - (6) Names of organizations or individuals responsible for reimbursement, including reimbursement for any non-official travel.
 - g. Provide that for travel other than mission travel, senior federal officials or non-Executive branch employees do not travel aboard a Government aircraft without the prior written approval of the DOE General Counsel or his or her principal deputy.

- h. Provide that for travel, other than mission travel, all other Executive branch employees who are not senior federal officials do not travel aboard a Government aircraft without the prior written approval of Southwestern's General Counsel.
- i. Provide that cost effectiveness is determined as the total cost to taxpayers/ratepayers of each available mode of travel, including the cost of the transportation (the cost of the commercial airfare to be used for the comparison is the Government rate or the lowest fare available, if there is no Government rate available, for the date of travel quoted to the traveler on the date the traveler learned about the trip) and related factors such as the per diem and the employee's lost work time with each option.
- j. Provide that the travel-approving authority will retain documentation of the cost analysis for two fiscal years following the year of travel.
- k. Provide that users contact an approved Commercial Aviation Service (CAS) vendor and arrange for the transportation needs.
- l. Provide that at the completion of the flight, the senior passenger shall complete SWPA F 5480.2, Passenger Evaluation Checklist (see [Attachment IV-2](#)). The completed Checklist shall be sent to the Aviation Manager to be used to ascertain that the contract-operator is complying with Southwestern requirements.

NOTE: Aviation safety may well be compromised if any aviation service is provided by any individual not on the Southwestern or DOE accepted list. Therefore, use of any individual or CAS is not on the accepted list is **prohibited** without the expressed written approval of the Administrator and the Director, Office of Aviation Management, DOE.

APPROVED CONTRACTOR LIST

PRIMARY USE:

Air Flite, Inc. (Helicopter) 2320 Airport Drive, Shawnee, OK 74801

Type: Bell 206B3 ;

Part 91 Inspection:

10/23/08

DO/Chief Pilot
Director of Maintenance
Phone Number:
Fax Number:
No Flight Check Ride

Mark White, President
Marcus Dunn
(405) 275-4388
(405) 275-4389

EMERGENCY USE:

Springfield, MO, and Jonesboro, AR, Maintenance Areas:

Helicopters, Inc. 2745 North 2nd St., Memphis, TN 38103

Type: Enstrom F28-A, F 28-FX

Part 91 Inspection:

Inspection every 2 years
9/29/2008

Chief Pilot Approved:
Dir. of Maintenance
Phone Number:

Wayne Breeden
Thomas Faires
(901) 363-4899

Gore, OK, Maintenance Areas:

Air Flite, Inc. (Helicopter) 2202 Airport Drive, Shawnee, OK 74801

Type: Bell 206B3;

Part 91 Inspection:

10/23/08

DO/Chief Pilot
Director of Maintenance
Phone Number:
Fax Number:
No Flight Check Ride

Mark White, President
Marcus Dunn
(405) 275-4388
(405) 275-4389

GENERAL AVIATION CHARTER:

Emergency Rescue

AIREVAC Lifeteam,
306 Davis Dr., West Plains, MO 65775

1-800-247-3822

Aircrafts: Bell Model B-206L-1, 206L-3, 206L-4, 407

Maintenance and Operation Inspection
Certification #EVC A731D

Inspection every 2 years
09/25/08

Chief Pilot
Director of Operations
Director of Maintenance
Safety Program Manager
Phone number:
Fax Number:

Tony Bonham
Stuart Buckingham
Steve Thomas
Dave Harding
(417) 256-0010
(417) 255-1398

SWPA F 5480.2
(9/94)

**SOUTHWESTERN POWER ADMINISTRATION
PASSENGER EVALUATION CHECKLIST**

Approved Pilot's Name: _____ Date: _____

Flight from: _____ To: _____

Return to: _____

	GOOD	POOR
1. Housekeeping	[]	[]
2. Overall Courtesy	[]	[]
3. Pre-flight Safety Instruction Given?	YES	NO
4. Pilot: Reviewed flight plan w/Southwestern	YES	NO
Checked plane (walk around)	YES	NO
5. Weather conditions, temperature (going)	_____ / _____	
Weather conditions, temperature (return)	_____ / _____	
6. Take-off smooth?	_____	
Landing smooth?	_____	
7. Incidents considered unusual, non-routine, or unsafe?	_____	
8. Comments:	_____	

Passengers: _____

Signed (Senior Passenger)

CHAPTER V - FLIGHT-FOLLOWING AND EMERGENCY PROCEDURES

1. FLIGHT-FOLLOWING PROCEDURES.

- a. All 14 CFR 121/135 Air Carriers are required to file appropriate flight plans or develop a flight-following system.

Southwestern requires all contract operators to follow the procedures contained in this section while conducting special use activities. (Special use activities require an FAA authorization to be obtained by the contract operator.) Detailed transmission line inspection patrol is a special use activity, as it is conducted below the 14 CFR 135, 500' AGL restriction placed on the air carrier.

- b. All fixed-wing operations shall be conducted in accordance with a flight plan filed with a FAA flight service station. An Instrument Flight Plan is preferred for all operations.
- c. All rotary wing operations shall be conducted in accordance with a flight plan with a FAA Flight service station or through the FAA accepted company procedures. Flight-following procedures shall always be observed.
- d. During pre-flight planning of a detailed transmission line inspection patrol, the observer shall call to ensure that the designated Power System Dispatcher is aware of the aircraft's planned route of flight, estimated time of arrival at a designated location, and the number of persons on-board the aircraft. Flight-following logs shall be maintained by Power System Dispatchers and observer. The Aviation Manager will be notified in the event of emergencies. Logged entries shall contain the following minimum information:
 - (1) Name,
 - (2) Location,
 - (3) Time/Date; and
 - (4) Status of Flight.
- e. Flight-following call-in time shall be every 30 minutes (time may be extended to a **MAXIMUM** of 45 minutes if prior arrangements have been made between the observer and dispatcher). The flight crew shall update their estimated time of arrival if they expect to arrive more than 15 minutes after their planned estimated time of arrival. The flight crew shall notify the power system dispatcher when the aircraft has landed.

If the flight crew has not made notification of their landing, the power

system dispatcher shall attempt to contact the aircraft or fueling station at least twice. If unable to reach the flight crew after 15 minutes of estimated time of arrival, then the dispatcher shall notify the craft superintendent. The craft superintendent shall initiate the Aircraft Pre-Accident Plan ([Attachment V-1](#)).

Where radio communications are not available, the power system dispatcher shall be contacted by telephone at appropriate refueling or lunch stops so the flight-following plan will be updated. The time of the call shall be noted in the dispatcher's log, along with those portions of the flight that have been completed. Any additions or changes to the flight-following plan shall be noted. At the termination of the flight, the power system dispatcher shall be contacted so the flight-following log may be closed.

- f. Southwestern shall not conduct flight operations in forecasted or actual weather conditions that are judged by either the pilot-in-command or a crewmember to pose a hazard to the aircraft or its occupants.
- g. Variance: Contractor Patrol

Contractors will conduct their own flight-following when using contractor personnel only. Contractor will notify Southwestern's Dispatcher at the beginning and end of an aerial patrol and provide the Dispatcher with the contractor's office number for contact in the event of a line outage. Craft Superintendent requesting the flight will be provided a copy of the Flight Log and Flight Following Procedures. The Craft Superintendent will keep the original and send a copy to the Aviation Manager.

2. EMERGENCY PROCEDURES FOR SEARCH AND RESCUE. Appropriate emergency procedures in accordance with Southwestern's Aircraft Pre-Accident Plan shall:

- a. Be initiated immediately upon receipt of any communication from the aircraft which indicates that the aircraft or crew is imperiled (equipment failure, and emergency landing).
- b. Be initiated when no communications from the aircraft have been received within any 60-minute period and attempts by the dispatcher to reach the crew have been unsuccessful.
- c. Emergency aircraft will be instructed on flight following procedures.
- d. Call 911.

The 911 operator will need to know the following information when you call:

- Southwestern has an AIREVAC, Inc. membership
- Description of the landing area including hazards and landmarks, or exact location if GPS is available
- Ground contact unit number
- Frequency to communicate from air to ground
- Location of the landing area in relation to the incident
- Number and approximate age of patients
- Any entrapment
- Patient's medical condition report if available
- Designate landing zones that are used often.

3. EMERGENCY PROCEDURES FOR PROPERTY DAMAGE OR OTHER CATASTROPHIC OCCURRENCES.

- a. After review by the Assistant Administrator of appropriate office, the Division Director shall provide justification to the Aviation Manager for emergency detailed transmission line inspection patrols.
- b. Observe flight-following procedures as outlined in this manual.
- c. Each flight shall have a trained observer on board.
- d. The pilot must be on the approved contractor list. (Exception: The Administrator or the Director, DOE, Office of Aviation Management can grant written approval to use a contractor not on approved list.)
- e. The hazard map for the area must be followed.
- f. "Night flying" is not permitted.

AIRCRAFT PRE-ACCIDENT PLAN

1. This plan establishes the actions to take in the event of an overdue aircraft, an accident or incident.
2. The scope of this plan outlines the basic procedures necessary to activate emergency search, crash and rescue services, and associated activities, as rapidly and orderly as possible.
3. The plan is comprised of two categories:
 - a. Overdue aircraft.
 - b. Downed aircraft.

Each category lists actions to be taken. **DO NOT DELAY NOTIFICATION. TAKE IMMEDIATE ACTION;** keep an accurate written log and fill in the blanks as early as possible.

Someone's life may depend on it!

Category "A"

**PROCEDURES
Overdue Aircraft**

1. OBSERVER OR PILOT shall notify Dispatcher at (417) 891-2604, 2605, 2606 or via microwave x2604, x2605 or x2606.
2. DISPATCHER shall notify after receipt of notification from Observer or Pilot or if unable to contact the flight crew after fifteen (15) minutes of estimated time of arrival:
 - a. Craft Superintendent or local office.
 - b. Aviation Manager - phone number for normal work hours is 918-595-6600. After Hours/Weekends phone number located at Dispatch desk.
3. CRAFT SUPERINTENDENT OR LOCAL OFFICE shall notify after receipt of notification from Dispatch:
 - a. Emergency aircraft from accepted list (see Attachment IV-1).
 - b. National Transportation Safety Board.
 - c. Director, Division of Maintenance.
 - d. South Central Regional Office (Oklahoma and Arkansas)
Phone Number: 303-361-0600.
 - e. North Central Regional Office (Missouri)
Phone Number: 630-377-8177.
4. DIRECTOR, DIVISION OF MAINTENANCE shall notify after receipt of notification from Craft Superintendent or Local Office:
 - a. Assistant Administrator for Office of Corporate Facilities.
5. ASSISTANT ADMINISTRATOR FOR OFFICE OF CORPORATE FACILITIES shall notify:
 - a. Southwestern's Administrator upon receipt of notification by Director, Division of Maintenance or the Director's acting representative.

6. AVIATION MANAGER shall:
 - a. Notify Federal Aviation Administration Flight Service Station
Phone Number: 1-800-992-7433.

Phone Numbers: AR (870) 555-1212
MO (417) 555-1212
OK (918) 555-1212
 - b. Notify Contractor Facility, Air Flite
Phone Number: 1-800-234-7388.

Category "B"

**PROCEDURES
Downed Aircraft**

1. RESCUE SURVIVORS
 - a. Contact emergency helicopter (if available) with medical technician.
 - b. Phone Number: 1-800-AIREVAC.
 - c. Render first aid.
 - d. Call dispatcher at (417) 891-2604, 2605, 2606 or via microwave x2604, x2605 or x2606.
2. First person on the scene that is mentally and physically able will obtain a statement from witnesses of an aircraft accident (when possible, a report will be prepared).
3. DISPATCHER shall provide the Form 5480.1/manifest with next of kin names and other information to:
 - a. Craft Superintendent or local office.
 - b. Southwestern's Personnel Officer or designated contact using a roster located at the dispatch desk.
 - c. Aviation Manager - phone number for normal work hours is 918-595-6600. After Hours/Weekends phone number located at Dispatch desk.
4. CRAFT SUPERINTENDENT OR LOCAL OFFICE shall notify after receipt of notification from Dispatch:
 - a. Emergency aircraft from approved list.
 - b. Next of kin.
 - c. Director, Division of Maintenance.
 - d. National Transportation Safety Board:
South Central Regional Office (Arkansas) Phone: 303-361-0600.
North Central Regional Office (Missouri) Phone: 630-377-8177.

Provide to the NTSB per Title 49 CFR, section 830.6:

- (1) Type, nationality, and registration marks of the aircraft,

- (2) Name of the owner, and operator of the aircraft,
 - (3) Name of the pilot-in-command,
 - (4) Date and time of the accident,
 - (5) Last point of departure and point of intended landing of the aircraft,
 - (6) Position of the aircraft with reference to some easily defined geographical point,
 - (7) Number of persons aboard, number killed, and seriously injured,
 - (8) Nature of the accident, the weather and the extent of damage to the aircraft, so far as they are known; and
 - (9) A description of any explosives, radioactive materials, or other dangerous goods carried.
- e. Establish search and rescue as necessary.
 - f. Evacuate injured, notify hospital and doctors.
5. DIRECTOR, DIVISION OF MAINTENANCE shall notify after receipt of notification from Craft Superintendent:
- a. Assistant Administrator, Office of Corporate Facilities.
6. ASSISTANT ADMINISTRATOR, OFFICE OF CORPORATE FACILITIES shall notify:
- a. Southwestern's Administrator upon receipt of notification by Director, Division of Maintenance or the Director's acting representative.
7. AVIATION MANAGER shall notify:
- a. Federal Aviation Administration Flight Service Station
Phone Number: 1-800-992-7433.
 - b. Local law enforcement
Phone Numbers: AR (870) 555-1212 MO (417) 555-1212
OK (918) 555-1212.
 - c. Contractor Facility, Air Flite
Phone Number: 1-800-234-7388.

- d. DOE Director, Office of Aviation Management
Phone Number: Office: 202-586-8100.

8. SOUTHWESTERN'S PERSONNEL OFFICER shall:

- a. Provide logistical support, to the extent possible, to family members who desire to travel to the accident site (or to a hospital location), which includes, but is not limited to, transportation, lodging, meals, security, communications, and incidentals.

Factors to consider in selecting a facility are: quality of rooms and size of facilities, privacy for family members, and relative proximity to medical examiner's office, temporary morgue, airport operations, accident site, and medical treatment facilities.

- b. In cases where identification of accident victims requires dental records, inform family members (or family friends or clergy who are with the family) at an appropriate time, but as early as possible after being notified, that it is critical that they contact their family dentists to obtain the dental records and dental x-rays of their loved ones. Ask the family to have the records and x-rays overnight express mailed to a designated agency representative at the accident. The agency representative will ensure the delivery of these records to the local medical examiner/coroner. If the family is coming to the site within the next 48 hours, the family may arrange to hand carry these documents. It shall be explained that dental records and x-rays are critical in the victim identification process.
- c. Make provisions for private rooms for medical examiner personnel to collect ante mortem questionnaire information from families who are at the site. These rooms shall have telephones for medical examiner personnel to telephonically collect ante mortem questionnaire information from families who are away from the site.
- d. Provide notification of family members prior to releasing passenger names to the public. Family members shall be advised and given appropriate time to notify other family members and friends prior to public release of the victim's name.
- e. Inquire at the time of notification or soon after if family members desire crisis assistance. If so, Southwestern may employ its Employee Assistance Program (EAP) provider to assist the family if the EAP provider is trained in this type of crisis assistance. If Southwestern does not want to employ its EAP provider, Southwestern will coordinate with the American Red Cross (ARC) to provide crisis assistance.
- f. Consult with family members regarding their wishes concerning agency-sponsored memorial service and memorial.

**LIST OF TELEPHONE NUMBERS
(Sample)**

ORGANIZATION/PERSON	PHONE NUMBER(S)	LOCATION
Ambulance	911 (870) 932-7966	Jonesboro
Hospital/Doctor	(870) 972-4100	Jonesboro
Craft Superintendent	(870) 972-4686	Work
Sheriff/Police	911 (870) 933-4550	Jonesboro
Aviation Manager	(918) 595-6600	Tulsa Office
National Transportation Safety Board	(303) 361-0600	South Central Regional Office (Oklahoma, Arkansas)
	(630) 377-8177	North Central Regional Office (Missouri)
Federal Aviation Administration Flight Service Station	(800) 992-7433	
County Coroner	(870) 935-5577	Jonesboro

APPENDIX A DEFINITIONS

1. Aircraft. A device that is used or intended to be used for flight in the air.
2. Aircraft Accident. An occurrence associated with the operation of an aircraft, which takes place from the time any person boards the aircraft with the intention of flight until all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage, as described in 49 CFR 830.
3. Aircraft Incident. An occurrence other than an accident, associated with the operation of an aircraft, which affects or could affect the safety of operations, as described in 49 CFR 830.
4. Airport. An area of land or water that is used or intended to be used for the landing and takeoff of aircraft, including its buildings and facilities, if any.
5. Aviation Manager. The Southwestern employee designated by the Assistant Administrator who is responsible for managing the aviation program.
6. Aviation Operations. Any operations of aircraft, airports or heliports, or the provision of any aviation support services thereto.
7. Aviation Technical Consultant. Person(s) designated to manage the aviation safety operations. The aviation technical consultants shall have sufficient aviation knowledge, background, and training to competently perform assigned duties.
8. Charter Aircraft. An aircraft operated and maintained by a commercial aviation service provider that is hired by an executive Agency under a contractual agreement specifying performance and a one-time exclusive use.
9. Civil Aircraft. Any aircraft other than military or public aircraft.
10. Commercial Aviation Services. Include the following:
 - a. aircraft leased for exclusive use for an agreed-upon period of fewer than 180 consecutive days;
 - b. aircraft chartered or rented for exclusive use;
 - c. full services (i.e., aircraft maintenance providers, aircraft, and related aviation services for exclusive use) contracted for or obtained through an inter-service support agreement (ISSA), regardless of the length of the contract or agreement; or

- d. aviation services (i.e., services but not aircraft) obtained by commercial contract or ISSA, except those services acquired to support a fleet aircraft.
11. Crewmember. A person assigned to operate or assist in operating a Government aircraft during flight time. Crewmembers perform duties directly related to the operation of the aircraft (e.g., as pilots, co-pilots, flight engineers, navigators) or duties assisting in the operation of the aircraft (e.g., as cabin safety specialists, crew chiefs).
 12. Dead Head Time. Time spent flying to and from work locations.
 13. DOE Aviation Operations. Any DOE operation of aircraft, airports, or heliports or any services that support DOE aviation activities.
 14. Emergency. A situation or occurrence of a serious nature, developing unexpectedly, and demanding immediate actions. Emergencies such as: location of transmission line disruptions, transportation of injured employees, and other emergency procedures as listed in Chapter V, paragraph 2 and 3.
 15. Flight Crew Member. A pilot, flight engineer, flight navigator or cabin safety personnel assigned to duty in an aircraft during flight time.
 16. FAA Airworthiness/DOE Flight Certificates.
 - a. FAA Standard Airworthiness Certificate. FAA Form 8100-2 is issued for aircraft that fully conform to the airworthiness requirements in Federal Aviation Regulations Parts 23 through 31, as applicable for aircraft, and which meet the requirements of the type certificate data sheet and are found airworthy.
 - b. FAA Special Airworthiness Certificates. FAA Form 8130-7 is issued for all non-standard aircraft, as classified under 14 CFR 21.175(b). FAA Form 8130-7 (pink), which indicates that the aircraft does not meet the airworthiness requirements of a Standard Airworthiness Certificate, may be issued in the following categories:
 - c.
 - (1) Restricted Category. Aircraft that do not qualify for certification in any other category because of design or intended use or because flight tests have not been conducted to qualify for other categories of operation; and
 - (2) Experimental Category. Experimental certificates are issued for research and development purposes and to show compliance with Federal Aviation Regulations. This category includes flight and ground testing of new aircraft designs, equipment installations, operating techniques, and uses.

17. Government Aircraft (Federal). Any Fleet or Commercial Aviation Service aircraft owned, leased, chartered, or rented by an executive Agency other than a branch of the Armed Forces or an intelligence agency.
18. Helicopter. Means a rotorcraft that depends principally on its engine-driven rotors for horizontal and vertical flight.
19. Leased or Contract Aircraft. Non-DOE owned aircraft obtained under a specific contract or lease agreement for use under DOE operational control. (90 days or more.)
20. Mission Personnel. Flight crew members, crew members or qualified non-crew members, see definitions.
21. Mission Requirements. In relation to use of Government aircraft at the Department of Energy, means activities that constitute the discharge of the Department's official responsibilities. Examples of mission requirements include, but are not limited to: Aerial Survey, such as atmospheric sampling, biological surveys, radiological surveys, natural resource management, oceanic, atmospheric, and geological research, etc.; Aerial Photography, for consequence management, decommissioning of facilities, construction, law enforcement, etc.; Aerial Patrols, such as law enforcement and intelligence activities, power line patrols, pipeline patrols, security, search and rescue, etc.; Transportation, such as transportation of prisoners, detainees, illegal aliens, mission personnel, fire fighting, rescue operations, cargo, etc.; Research and Development such as aeronautical and space research, aerial sensor development, etc.; Rotorcraft External Load Operations such as fire fighting, agriculture management, construction, etc.; Training such as flight or mission crew training. Travel aboard Government aircraft for purposes of attending meeting site visits, or conferences or making speeches are examples of travel that are not mission requirements travel.
22. Observer. Southwestern employee serving as a qualified non-crewmember during detailed transmission line inspection patrol operation.
23. Official Travel. Means (i) travel to meet mission requirements, (ii) required use travel, and (iii) other travel for the conduct of agency business.
24. Passenger. Any individual on-board an aircraft who is not a flight, crewmember, or qualified non-crewmember.
25. Pilot-In-Command. The pilot who is responsible for the safe and orderly conduct of an aircraft during flight operations.
26. Qualified Non-Crew Member. A person flying onboard a Government aircraft whose skills, duties or expertise are essential to performing or associated with

performing the (non-travel related) Governmental mission requirement for which the aircraft was dispatched. Qualified non-crew members may be researchers, flight directors, electronics technicians, system operators, photographers, law enforcement agents, fire fighters, agricultural engineers, emergency medical personnel, biologists, observers, etc.

27. Reasonable Requests. Requests that are related to the safety and effective conduct of the transmission line inspection/patrol.
28. Required Use Travel. Travel of an executive agency officer or employee for whom the use of Government aircraft is required to meet bona fide communications or security needs of the Agency or exceptional scheduling requirements. An example of a bona fide communications requirement is having to maintain continuous 24 hour secure communications with the traveler. Bona fide security requirements include, but are not limited to, life threatening circumstances. Exceptional scheduling requirements include emergencies and other operational considerations which make commercial transportation unacceptable.
29. Sponsoring Agency. A U.S. Government Agency with primary responsibility for the mission under which the travel was initiated.
30. Special Use Activities. Any aircraft flight where part or all of the in-flight activities, excluding takeoff and landing maneuvers at established airfields, are conducted at or below an altitude of 500 feet AGL (Above Ground Level). FAA special authorization is required.

AERIAL HAZARD MAPS

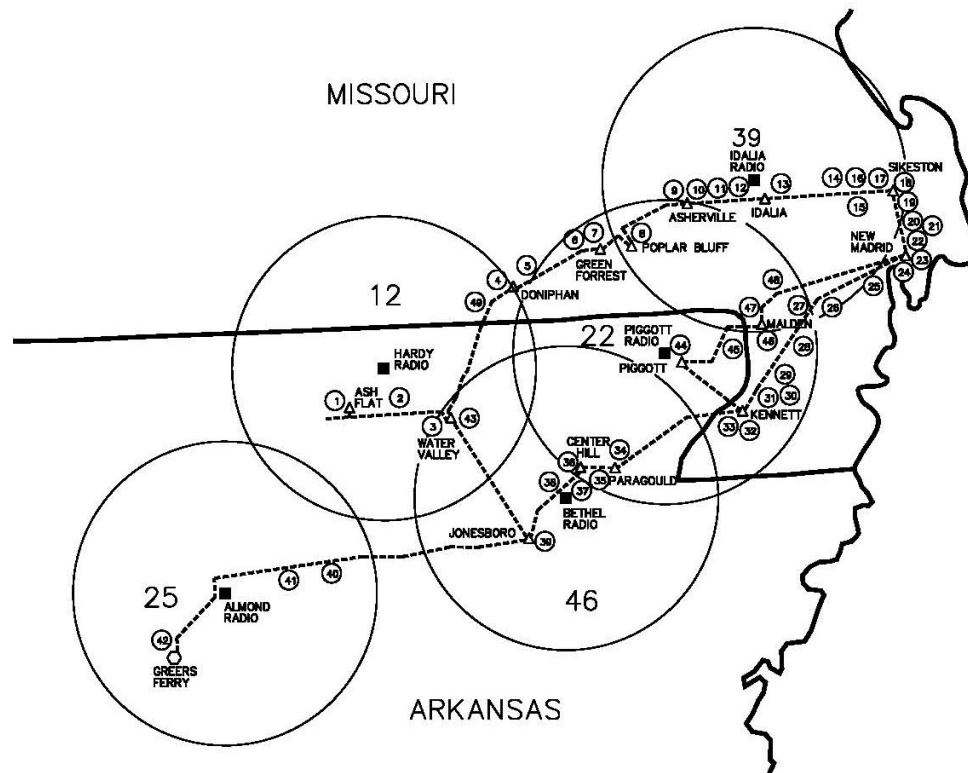
The Hazard Maps are updated as new hazards are identified. The maps will be reviewed annually for accuracy and the warning markers are checked every six (6) months.

MAPS

[APPENDIX VI-B-1](#), JONESBORO
[APPENDIX VI-B-2](#), SPRINGFIELD
[APPENDIX VI-B-3](#), GORE

HAZARDS TO AERIAL FLYING MAP JONESBORO

AERIAL HAZARDS MAP



JONESBORO AREA VHF RADIOS

12	HARDY RADIO KKG 212 MOBILE ACCESS *12 PHONE 2412	39	IDALIA RADIO KPK 239 MOBILE ACCESS *39 PHONE 2439
22	PIGGOTT RADIO KKG 222 MOBILE ACCESS *22 PHONE 2422	46	BETHEL RADIO KPK 246 MOBILE ACCESS *46 PHONE 2446
25	ALMOND RADIO KKG 225 MOBILE ACCESS *25 PHONE 2425		

SPRINGFIELD OPERATIONS CENTER 4-DIGIT TELEPHONE NUMBERS

DISPATCH (LOAD DESK)	2805
DISPATCH (TRANSMISSION DESK)	2806

VHF RADIO ACCESS TO SWPA TELEPHONE SYSTEM

* [TOWER ACCESS CODE] (DIAL TONE) [4 DIGIT SWPA TELEPHONE NUMBER] (CONVERSATION) # [TOWER ACCESS CODE]

* ENTER
ACCESS CODE-HANG-UP
ACCESS CODE ** RE-DIAL

LEGEND

----- TRANSMISSION LINE

▲ SUBSTATION

○ DAM

■ RADIO STATION

⊙ AERIAL HAZARD IDENTIFIER

12 LARGE NUMBERS INDICATE THE TOWER ACCESS CODE WITHIN THE ASSOCIATED RADIUS

HAZARDS TO AERIAL FLYING MAP JONESBORO

All substations are hazardous. Standard substation hazards means numerous service lines in and out, turns on patrolling line, and structures inside substations generally higher than normal aerial patrol altitudes.

Line No.	Structure No.	Hazard No.	Description
Line 3002 Ash Flat to Idalia Sub.	266	1	Ash Flat Substation.
	341-342	2	SWPA crosses APL 161 kV Line.
Begin Water Valley Tap	446	3	APL 161 kV crossing.
	605-609*	49	SHO-ME 345 kV overhead line.
	675	4	Doniphan Substation.
	774-748	5	345 kV crossing.
	822-823	6	161 kV crossing.
	824	7	Green Forest Substation.
Begin Poplar Bluff Tap	842	8	Poplar Bluff Substation.
	919-920	9	SWPA crosses M&A 69 kV Line & Substation.
	926-927	10	Asherville Substation.
	1023-1024	11	SWPA crosses M&A 69 kV Line.
	1097	12	Idalia Substation.
Line 3007 Jonesboro to Greers Ferry	155-157	41	Independence County Substation; Steel Structure at White River crossing.
	228-229	40	APL 161 Line crossing.
	663	39	Jonesboro Substation.
	S1-S2**	42	Steel Structures at Greers Ferry Dam.
Line 3010 Kennett to Jonesboro	S1**	39	Steel Tower at Jonesboro Substation.
	68-70	38	Bethel Microwave Tower.
	87	37	Cell Tower.
	130	36	Center Hill Substation.

*Aircraft Warning Markers on these structures. The Warning Markers are large, yellow, square, metallic markers.

**Lattice Steel Structure

HAZARDS TO AERIAL FLYING MAP JONESBORO

Line No.	Structure No.	Hazard No.	Description
Line 3010 Kennett to Jonesboro (continued)	136-137	35	Distribution Line crossing.
	169	34	Paragould Substation.
	371-372	33	SWPA crosses 69 kV Line.
	377	32	Kennett Substation.
Line 3011 Idalia to Sikeston	1	12	Idalia Substation.
	1-2	13	SWPA crosses M&A 69 kV Line.
	6-7	14	Associated 345 kV crossing.
	14-15	15	SWPA crosses 110 kV line.
	74-75	16	SWPA crosses M&A 69 kV Line.
	87-89	17	Micro-wave Tower Guys.
	91	18	Sikeston Substation.
Line 3014 New Madrid to Kennett	1	32	Kennett Substation.
	2	31	SWPA crosses 69 kV Line.
	63-64	30	SWPA crosses 161 kV Line.
	87-88	29	SWPA crosses 69 kV Line.
	162-163	28	161 kV crossing.
	176-177	27	345 kV crossing.
	237-238	26	SWPA crosses 69 kV Line.
	249-250	25	345 kV crossing.
	280	24	First 10 structures double circuit steel structures; and New Madrid Substation.
Line 3015 Sikeston to New Madrid	156	18	Sikeston Substation.
	115-116	19	SWPA crosses 69 kV Line.
	123-124	20	SWPA crosses 69 kV Line.
	145-147	21	Distribution Line crossing.
	149-150	22	SWPA crosses 69 kV Line.
	1-10	23	Double circuit steel towers in New Madrid Substation.

*Aircraft Warning Markers on these structures. The Warning Markers are large, yellow, square, metallic markers.

**Lattice Steel Structure

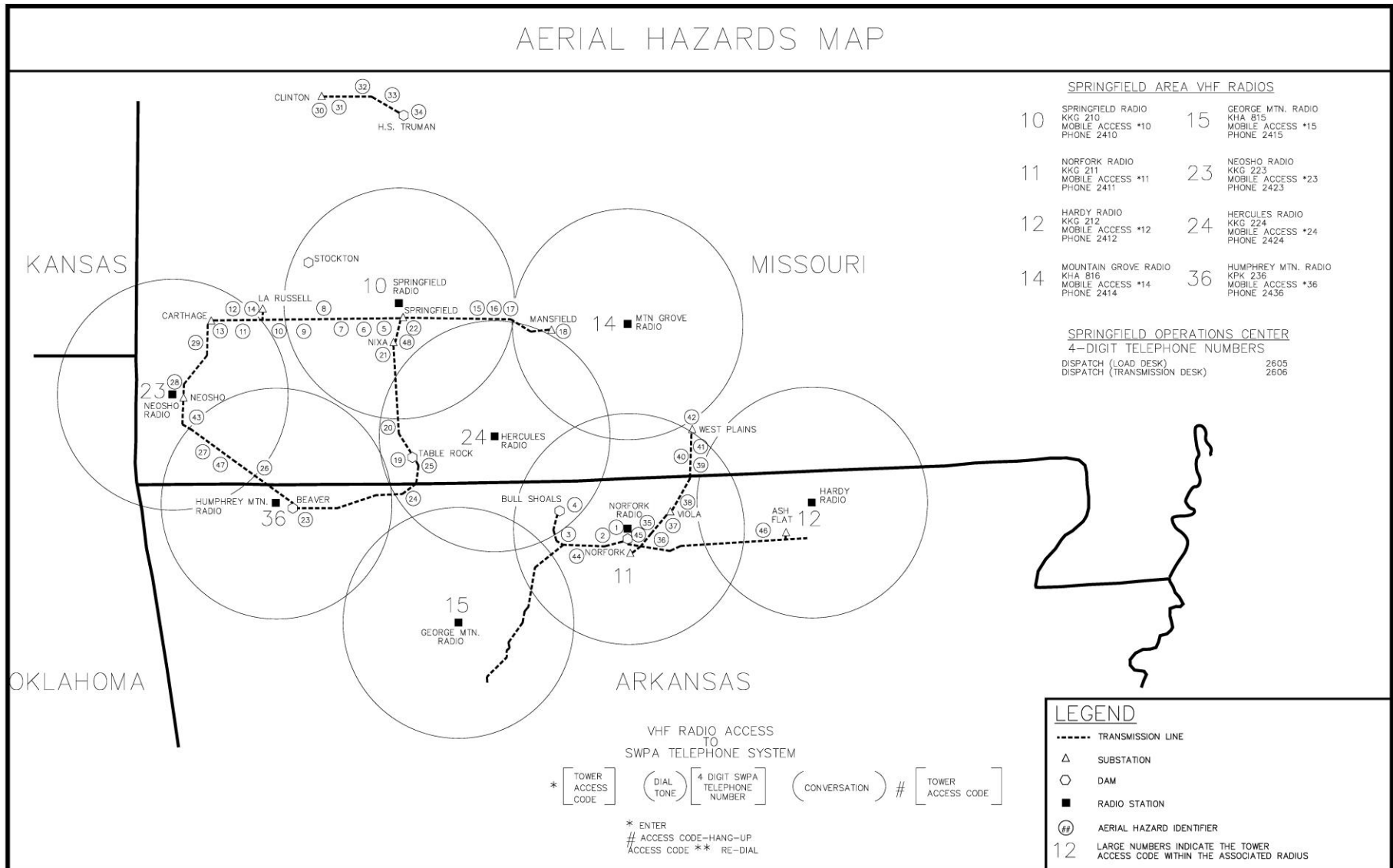
**HAZARDS TO AERIAL FLYING MAP
JONESBORO**

Line No.	Structure No.	Hazard No.	Description
Line 3320 69 kV Line Kennett to New Madrid	1	32	Kennett Substation.
	95	44	Piggott Substation.
	162	45	M&A 69 kV Line and Distribution Line crossing
	245	46	Malden Substation and Microwave Tower.
	248-250	47	Distribution Line crossing.
	275-277	48	Distribution Line crossing.
	400	23	New Madrid Substation.
Line 8001 Jonesboro to Water Valley	1	43	Water Valley Substation.
	285	39	Jonesboro Substation.

*Aircraft Warning Markers on these structures. The Warning Markers are large, yellow, square, metallic markers.

**Lattice Steel Structure

HAZARDS TO AERIAL FLYING MAP SPRINGFIELD



HAZARDS TO AERIAL FLYING MAP SPRINGFIELD

All substations are hazardous. Standard substation hazards means numerous service lines in and out, turns on patrolling line, and structures inside substations generally higher than normal aerial patrol altitudes.

Line No.	Structure No.	Hazard No.	Description
Line 3001 Norfolk to STR. 417	1	1	Norfolk Substation, several powerlines.
	4-5 *	2	North Arkansas Electric Coop 69 kV crossing under SWPA 161 kV line.
	82	44	Buford Substation (NAEC).
	121-121A	3	Bullshoals Tap, 3001A.
	291-293	49	Hilltop Substation (Entergy Tap).
Line 3001A Bullshoals to REA Valley Tap	1	4	Bull Shoals Substation, several powerlines, Gaston airport traffic in the area.
Line 3002	5-6	45	SHO-ME 161 kV line crossing over SWPA 161 kV line.
	178	46	Glencoe Substation (NAEC).
Line 3003 Springfield to Carthage	1	5	Springfield Substation, several powerlines.
	4-5	6	City Utilities of Springfield 161 kV line crossing.
	16-17 *	7	City Utilities of Springfield 161 kV line crossing.
	143-144 *	8	Empire District Electric 161 kV line crossing.
	185-186	9	Communications tower down guys south side of the line, at edge of the right-of-way.
	315-316 *	10	Empire District Electric 161 kV line crossing.
	324	11	LaRussell Tap 3003A.

*Aircraft Warning Markers on these structures. The Warning Markers are large, yellow, square, metallic markers.

HAZARDS TO AERIAL FLYING MAP SPRINGFIELD

Line No.	Structure No.	Hazard No.	Description
Line 3003 Springfield to Carthage (continued)	372-374 *	12	Private airstrip south of line, markers installed on the shield wire.
	412	13	Carthage Substation, several powerlines.
Line 3003A La Russell Tap	1	14	Empire District Electric, LaRussell Generation Plant/Substation.
Line 3004 Springfield to Mansfield	1	5	Springfield Substation, several powerlines.
	59	15	City Utilities of Springfield, Clay Substation, several powerlines.
	91B	16	Associated Electric Coop, Logan Substation.
	97	17	Empire District Electric, 69 kV line under SWPA 161 kV line.
	331	18	Mansfield Substation, several powerlines.
Line 3006 Tablerock to Springfield	1	19	Table Rock Substation, several powerlines.
	37-38 *	20	Empire District Electric 161 kV line crossing. Extra precaution needed; very high shield wires on their line.
	211	21	SWPA Nixa Substation, powerlines.
	224-229 *	48	Kamo 161 kV overhead line; steel structures 226 & 227.
	239-240 *	22	City Utilities of Springfield, 161 kV line crossing.
	264	5	Springfield Substation, several powerlines.

*Aircraft Warning Markers on these structures. The Warning Markers are large, yellow, square, metallic markers.

HAZARDS TO AERIAL FLYING MAP SPRINGFIELD

Line No.	Structure No.	Hazard No.	Description
Line 3008 Beaver to Tablerock	1	23	Beaver Substation, several powerlines.
	211-212 *	24	KAMO 69 kV line crossing.
	246-247 *	25	Empire District Electric 161 kV line crossing.
	249	19	Table Rock Substation, several powerlines.
Line 3009 Beaver to Carthage	1	23	Beaver Substation, several powerlines.
	74	47	Washburn Substation (KAMO).
	209-210 *	26	Empire District Electric 345 kV line crossing.
	386-387 *	27	KAMO 161 kV line crossing.
	301	28	SWPA Neosho Substation, several powerlines.
	416-417	29	Tall grain silo at edge of right-of-way, west of the line.
	468	13	Carthage Substation, several powerlines.
	289-291	43	Empire District Electric, 161 kV line crossing.
Line 3025 Clinton to Truman	1	30	Clinton Substation, several powerlines.
	9	31	Missouri Public Service 161 kV line crossing.
	28	32	KAMO 69 kV line crossing.
	67-69 *	33	Waterfowl warning, markers installed on shield wires.
	206	34	Truman Substation, powerlines and communications tower nearby.

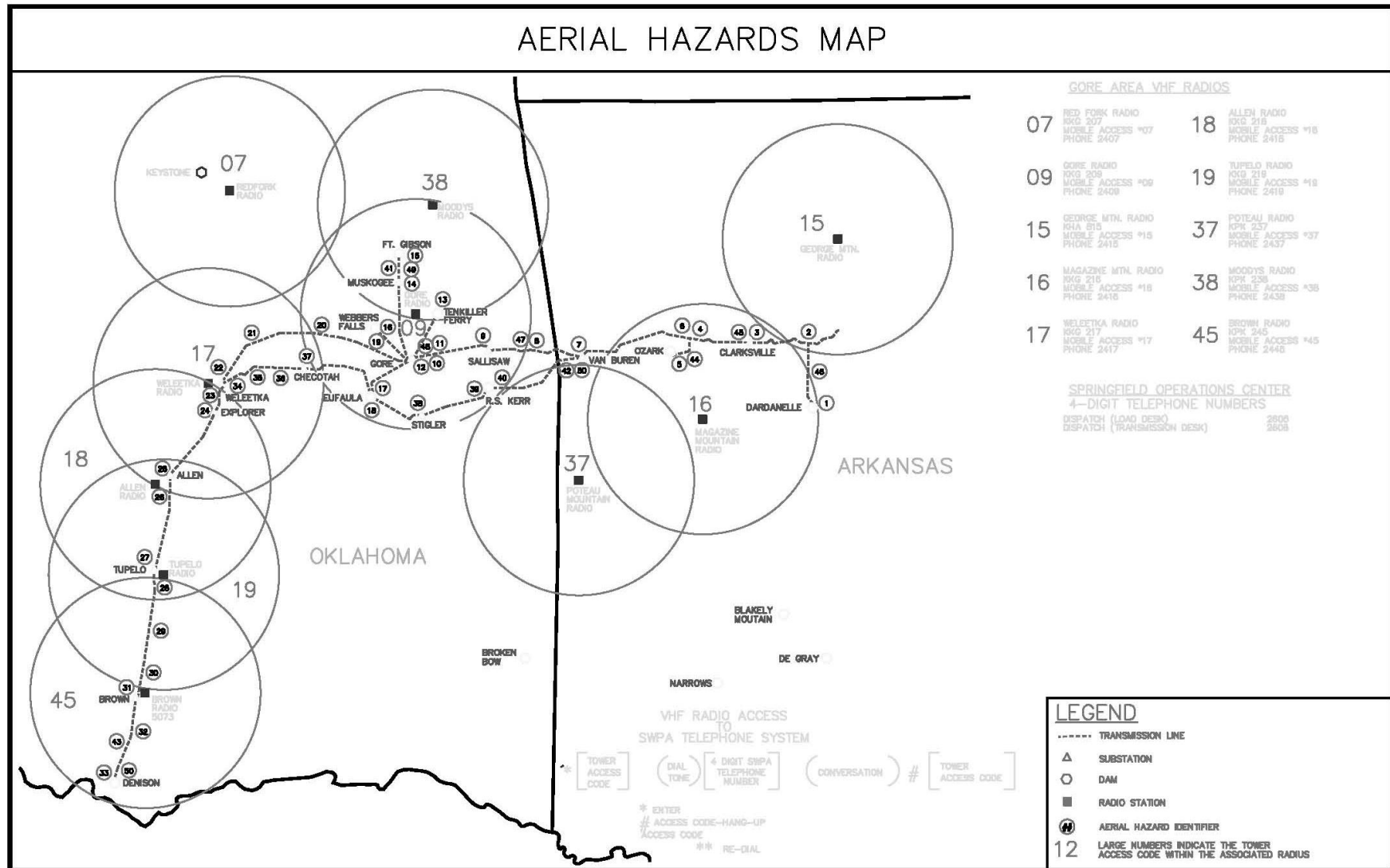
*Aircraft Warning Markers on these structures. The Warning Markers are large, yellow, square, metallic markers.

**HAZARDS TO AERIAL FLYING MAP
SPRINGFIELD**

Line No.	Structure No.	Hazard No.	Description
Line 3303 Norfolk to West Plains	1	1	Norfolk Substation, several powerlines.
	6-7 *	35	Sho-me 161 kV line crossing and Arkansas Power & Light 161 kV line crossing.
	12-13 *	36	Sho-me 161 kV line crossing.
	32-33 *	37	SWPA 161 kV line crossing, Line 3002.
	173	38	North Arkansas Electric Viola Substation, several powerlines.
	341	39	Sho-me China Substation, powerlines.
	376-377 *	40	Sho-me 69 kV line crossing.
	382-383 *	41	Sho-me 161 kV line crossing.
	399	42	Sho-me West Plains Sub., several powerlines.

*Aircraft Warning Markers on these structures. The Warning Markers are large, yellow, square, metallic markers.

HAZARDS TO AERIAL FLYING MAP GORE



HAZARDS TO AERIAL FLYING MAP GORE

All substations are hazardous. Standard substation hazards means numerous service lines in and out, turns on patrolling line, and structures inside substations generally higher than normal aerial patrol altitudes.

Line No.	Structure No.	Hazard No.	Description
Line 3001 Clarksville to Van Buren	634	2	Double circuit steel tower line going South to Dardanelle Dam.
	756-757	3	Clarksville Substation.
	922	4	Ozark Tap East.
	758-759	45	OG&E crossing over SWPA lines aircraft hazard markers east of Clarksville substation.
Line 3001C Dardanelle Dam to Line 3001	1	1	Dardanelle Substation Power House.
	32-35	46	High Voltage Line Crossing.
Line 3001D Ozark East Tap to Ozark Dam	3	5	Ozark Tap.
	940	6	Ozark Tap West.
	1177	7	Van Buren Substation. Numerous lines coming into substation from four directions. Microwave towers.
	17-19	44	High voltage line crossing.
Line 3005 Van Buren to Gore	1	7	Van Buren Substation. Numerous lines coming into substation from four directions. Microwave towers.
	73-83 *	8	Aircraft hazard markers for ARK- LA 154 kV crossing.
	98	47	Liberty Tap Line crossing.
	203A	9	GRDA Substation Tap Line.
	282-287 *	10	OG&E Tower Line 345 kV between Structures 284 and 285.
	327-332 *	11	OG&E 69 kV Substation.

* Aircraft Warning Markers on these structures. The Warning Markers are large,, yellow, square, metallic markers.

HAZARDS TO AERIAL FLYING MAP GORE

Line No.	Structure No.	Hazard No.	Description
Line 3005 Van Buren to Gore (continued)	349-351	48	High Voltage Line Crossing.
	369	12	Gore Substation. Numerous lines coming into substation from several directions.
Line 3005 Gore to Weleetka	10	12	Gore Substation. Numerous lines coming into substation from several directions. Double circuit steel tower. (Structure 512 on Line 3005E).
	385-390 *	19	OG&E 345 kV line crossing between Structures 387 and 388.
	442-447 *	20	OG&E 161 kV line crossing between Structures 444 and 445.
	603-608 *	21	345 kV line crossing between
			Structures 605 and 606.
	868-873 *	22	138 kV line crossing between Structures 870 and 871.
	874	23	Weleetka Substation. Numerous lines coming into substation.
Line 3005A Van Buren Sub to OG&E Sub	1	7	Van Buren Substation
	4	50	OG&E Substation
Line 3005C Gore to Ft. Gibson	1	12	Gore Substation. Numerous lines coming into substation from several directions.
	113	14	OG&E River Bank Tap going west.
	170	15	Fort Gibson Dam and Substation.
	120-121	49	High Voltage Line Crossing.
	149-152	41	High Voltage Line Crossing.

* Aircraft Warning Markers on these structures. The Warning Markers are large,, yellow, square, metallic markers.

HAZARDS TO AERIAL FLYING MAP GORE

Line No.	Structure No.	Hazard No.	Description
Line 3005D Gore to Tenkiller	1	12	Gore Substation. Numerous lines coming into substation from several directions.
	41	13	Tenkiller Dam Switching Yard.
	38-40	43	High voltage crossing.
Line 3005E Gore to Eufaula	1	18	Eufaula Substation and dead end tower.
	152	12	Gore Substation. Numerous lines coming into substation from several directions. Double circuit steel tower. (Structure S10 on Line 3005).
	141	17	OG&E 345 kV line crossing between Structures 141 and 142.
Line 3005F Gore to Webbers Falls	20	12	Gore Substation. Numerous lines coming into substation from several directions.
	1	16	Numerous steel towers and substation goat heads around dam at Webbers Falls.
Line 3016 Eufaula to Kerr	107A-107D	38	Tap Structures to Stigler Substation.
	263	39	R.S. Kerr Dam.
Line 3017 R.S. Kerr to Van Buren	1	39	R. S. Kerr Dam.
	30-35 *	40	OG&E 345 kV line between Structures 32 and 33.
	212	7	Van Buren Substation. Numerous lines coming into substation from four directions.
	194-199	42	OG&E Line Crossing near Hwy 59.

* Aircraft Warning Markers on these structures. The Warning Markers are large,, yellow, square, metallic markers.

HAZARDS TO AERIAL FLYING MAP GORE

Line No.	Structure No.	Hazard No.	Description
Line 3106 Eufaula to Weleetka	372	23	Weleetka Substation. Numerous lines coming into substation from several directions.
	365-366	34	138 kV line crossing between Structures 365 and 366.
	266-271 *	35	345 kV line crossing between Structures 268 and 269.
	123-124	36	138 kV line crossing between Structures 123 and 124.
	91-92	37	GRDA Checotah Substation.
Line 3101 Weleetka to Denison	888	23	Weleetka Substation. Numerous lines coming into several directions.
	723	24	Steel Pole. Explorer Tap.
	612-617 *	25	345 kV line crossing between Structures 614 and 615.
	612	26	Allen Substation (P5O) Steel switch pole.
	463A	27	Tupelo Substation.
	460-461	28	138 kV line crossing between Structures 460 and 461.
	425-426	29	138 kV line crossing between Structures 425 and 426.
	391-396 *	30	PS0 345 kV line crossing between Structures 393 and 394.
	160	31	Brown Substation.
	157-159	32	138 kV crossing between Structures 157-158 and 161 kV line crossing between Structures 158-159.
	4-5	33	Denison Dam.
	38-40	43	High voltage dam crossing.

* Aircraft Warning Markers on these structures. The Warning Markers are large,, yellow, square, metallic markers.